



# *Facilities Presentation to the Clinical Center Research Hospital Board (CCRHB)*

by  
Dan Wheeland, P.E.  
Director, Office of Research Facilities

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## *Several Positive Developments Since We Last Met*

- Completed Interim Intravenous Admixture Unit Project
- Completed Center for Cellular Engineering Center Project; completing qualifications
- Completed NCI Tumor-Infiltrating Lymphocyte (TIL) Project; completing qualifications
- Surgery, Radiology, and Laboratory Medicine (SRLM) Project
  - Balance of funding was provided in the FY2021 Omnibus Appropriations Act
  - Thanks for your assistance!!!
  - NIH's goal was to award the SRLM contract in the fourth quarter of FY21. Unfortunately, the award date has slipped to the first quarter of FY22.
    - Maryland Department of the Environment Stormwater Management Plan:
      - Scheduled approval: December 2020.
      - Actual approval: February 1, 2021.
    - National Capital Planning Commission:
      - Scheduled approval: December 2020
      - Actual approval: March 4, 2021.
  - No further external approvals required, so risks of delay are minimal
  - March 25, 2021: NIH provided pre-proposal informational presentation to contractors that was well-attended.
- Quarterly Meetings with Congressional Appropriations Committee Staffs Continue
  - Meetings demonstrate interest in NIH facilities overall
  - Will need Congressional support for future clinical project needs





## *Critical Projects Within the Building 10 Complex*



# *C103157 Surgery, Radiology and Laboratory Medicine (SRLM) Building, including Catheterization Lab and Interventional Radiology*



Looking from north to south

**Identified Risk/Impact:** Clinical Center Departments of Perioperative Medicine, Laboratory Medicine, Radiology and Imaging Sciences, and the NHLBI Cardiac Catheterization Program are housed in 1980-era obsolete space with mechanical, electrical and plumbing infrastructure that cannot be economically upgraded. **Leaks and floods occur regularly in the existing space.**

**Project Benefit / Risk Mitigation Strategy:** Safe, compliant, maintainable and flexible facilities to support cutting edge research and optimal patient care.

**Funding Status:** Construction Fully funded: FY2020 NEF Carryover; FY2020 B&F Carryover; FY2021 NEF.

**Schedule Status:** Bridging Documents under development for D-B contract solicitation in 3<sup>rd</sup> Qtr. of FY 2021. Anticipated award of a Design-Build contract in 1<sup>st</sup> Qtr. of FY2022.

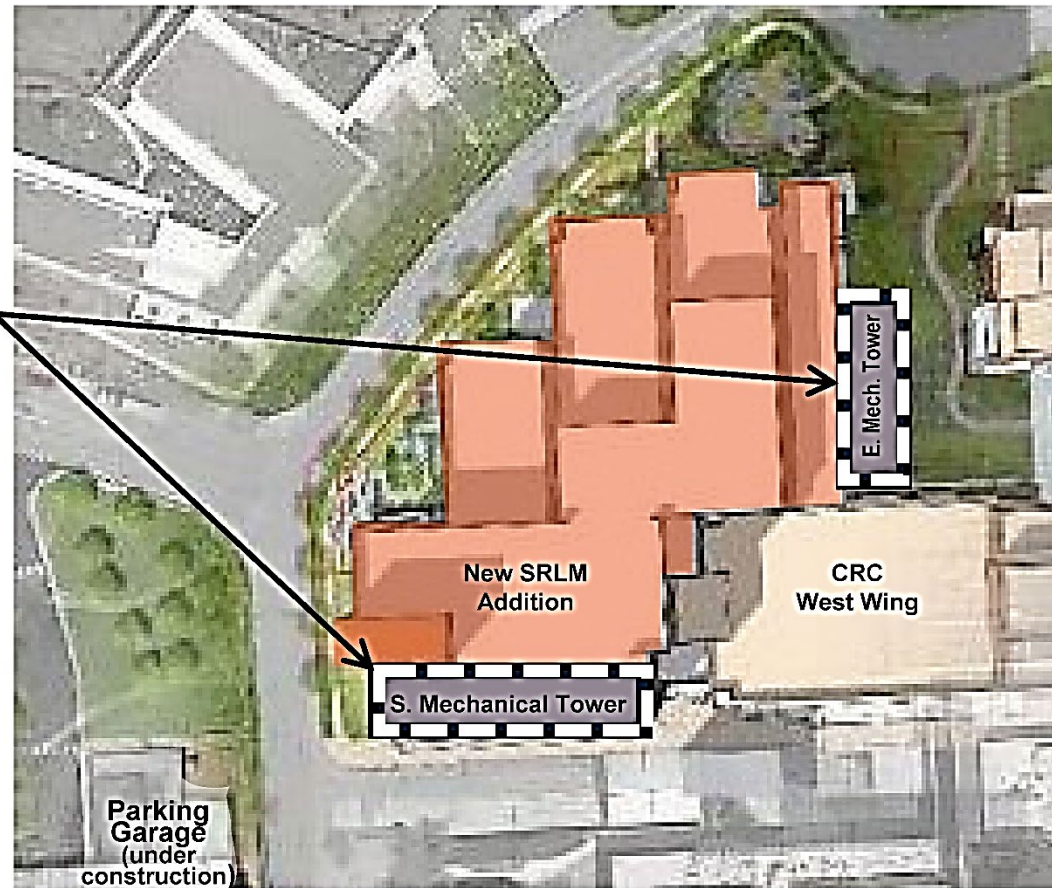


Looking from west to east

# *SRLM Design Features To Mitigate Likelihood and Consequences of Leaks and Floods*

## **New Addition**

- 547,290 Building Gross Square Feet
- 8 Stories + Occupied Basement
- Mechanical Penthouse
- **Two-tower Mechanical Distribution**

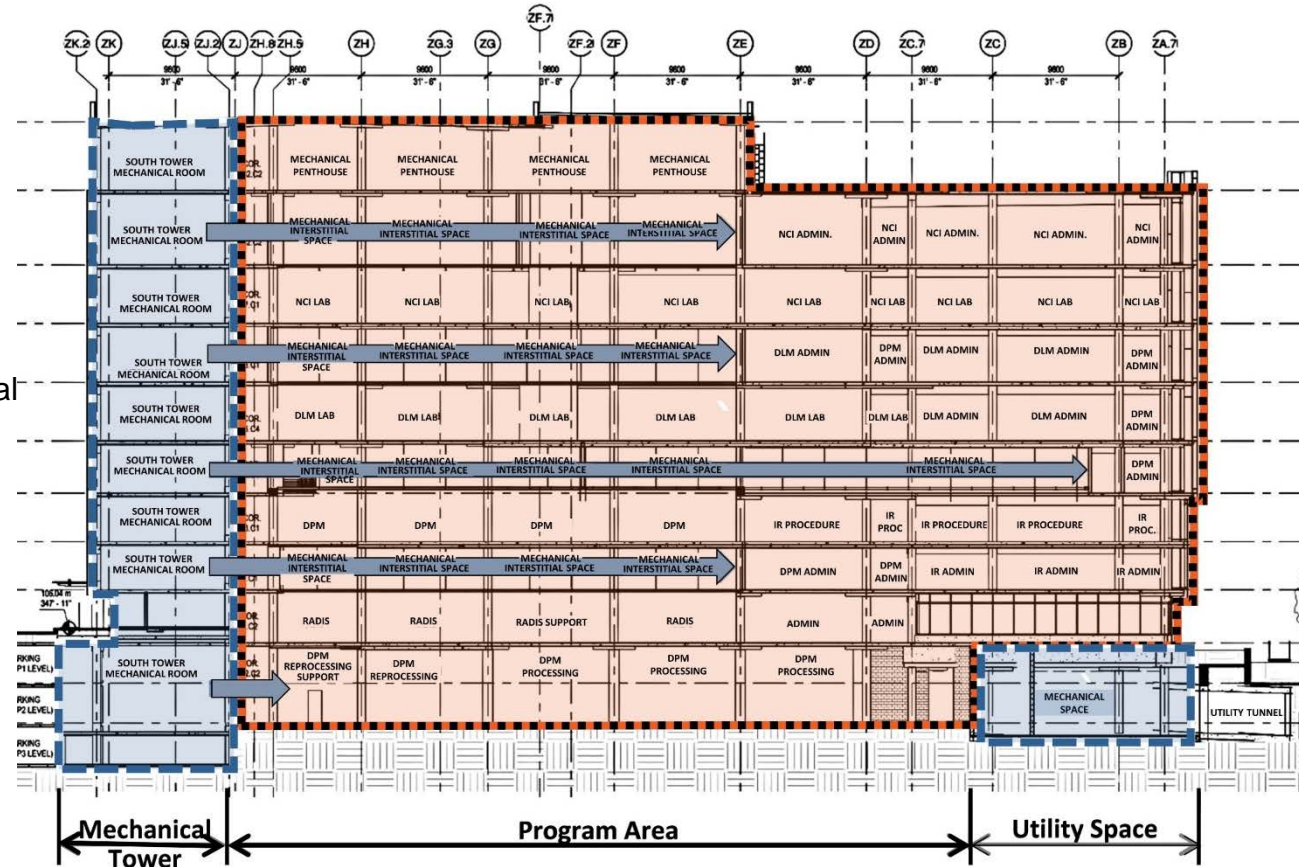




# SRLM Cross-Section

## Reducing Likelihood & Consequences of Leaks and Floods

- Air Handling Units & Plumbing Risers located in vertical “Towers” outside of the Clinical & Research Program Footprint.
- Major horizontal distribution of Mechanical, Electrical & Plumbing occurs on interstitial floors.
- No piping over critical spaces.
- Limited O & M disturbance to Clinical & Research Area.
- 8” Curbs (“water-stops”) provided at all floor openings.
- Concrete floors & curbs sealed with continuous epoxy coating.
- Strategically placed floor drains at utility space doors and distributed within utility rooms and in corridors.
- Concrete masonry walls enclose spaces to the greatest extent possible.

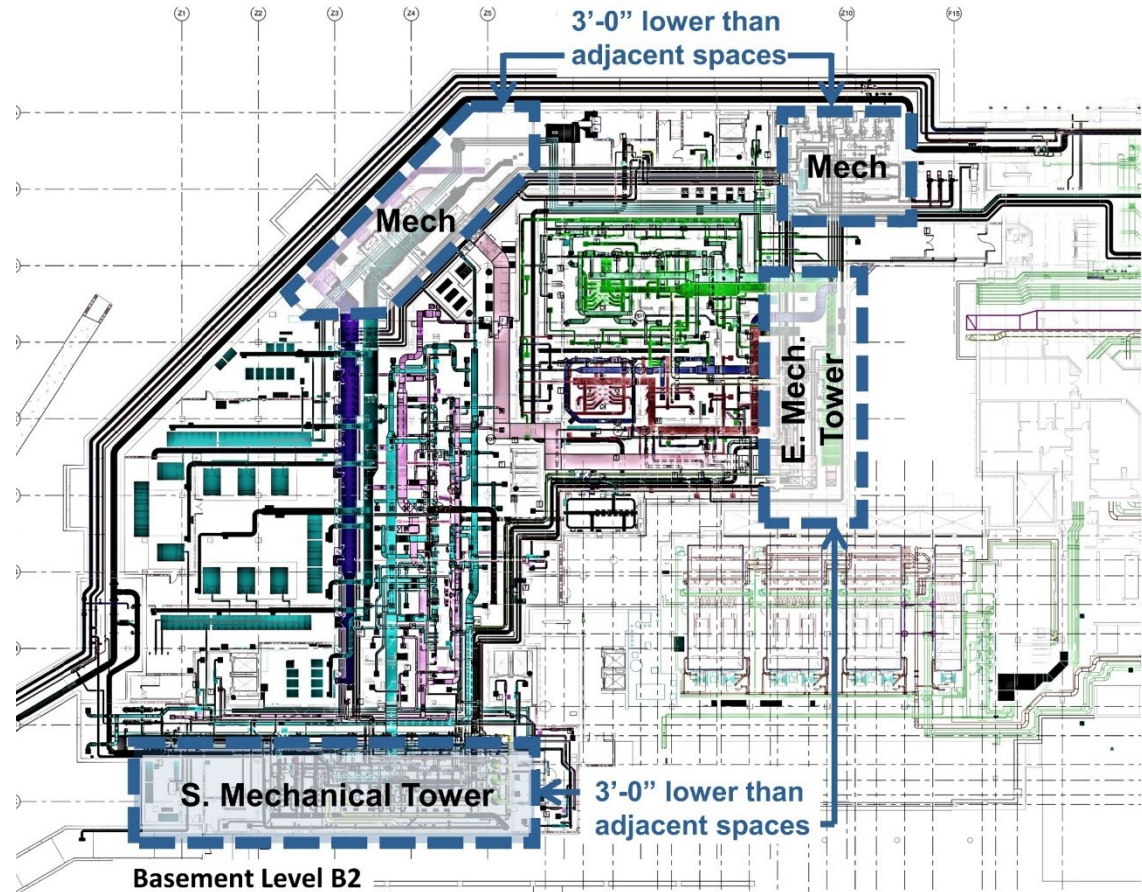




# SRLM Design Features

## Reducing Likelihood & Consequences of Leaks and Floods (Continued)

- On B2 Level, “Wet” Mechanical Rooms are 3’-0” below main floor level.
- Leak detection & BAS alarms in Mechanical Rooms.
- Control & Check valves at critical coil piping.
- AHUs with inherent design & control features minimize coil freezing and flooding.
- Soldered, threaded & welded piping for mechanical and plumbing systems.



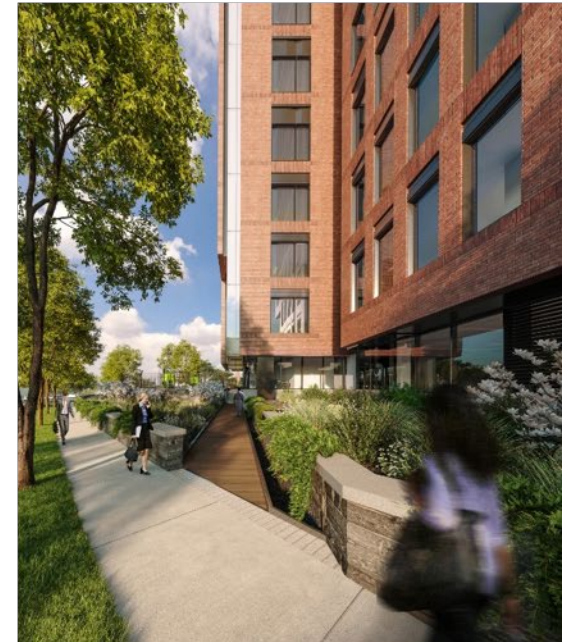




# Sustainability Strategies



- Leadership in Environmental and Energy Design (LEED) Certification Target Certification: Gold
- Micro bioretention areas with gravel and bioretention planting mix
- 100% outside air increases indoor air quality exceeds minimum ASHRAE 60.1
- ASHRAE 90.1 energy code/energy conservation features include chilled beams, heat recovery, building automation and control system, metering, and occupant comfort.
- Lighting controls, day light clearstory, LED lights with no mercury
- Water use reduction: 20% reduction due to efficient fixtures
- Building envelope commissioning and final MEP systems commissioning
- Construction and demolition waste mgt /material recycle
- Materials meet or exceed EPA's recommended recycled percentages. No ozone depleting compounds per Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990.



# C104935 Center for Cellular Engineering (CCE) Cell Processing Facility



**Identified Risk/Impact:** Inadequate amount of cGMP-compliant space to accomplish critical research objectives.

**Project Benefit / Risk Mitigation Strategy:**  
New facility to support DTM with additional aseptic Cell Processing and Engineering.

**Funding Status:** Funded

**Schedule Status:** Construction completed in November 2020. Commissioning, Qualification, and Validation (CQV) completion projected in May 2021. Environmental Monitoring Performance Qualification (EMPQ), scheduled for June 2021, will provide documented evidence that the area is capable of meeting specified levels for the proposed classification.

# *C105122 NCI Tumor Infiltrating Lymphocytes (TIL) Cell Processing Modular Facility*



**Identified Risk/Impact:** Lack of available facilities to accomplish critical research objectives.

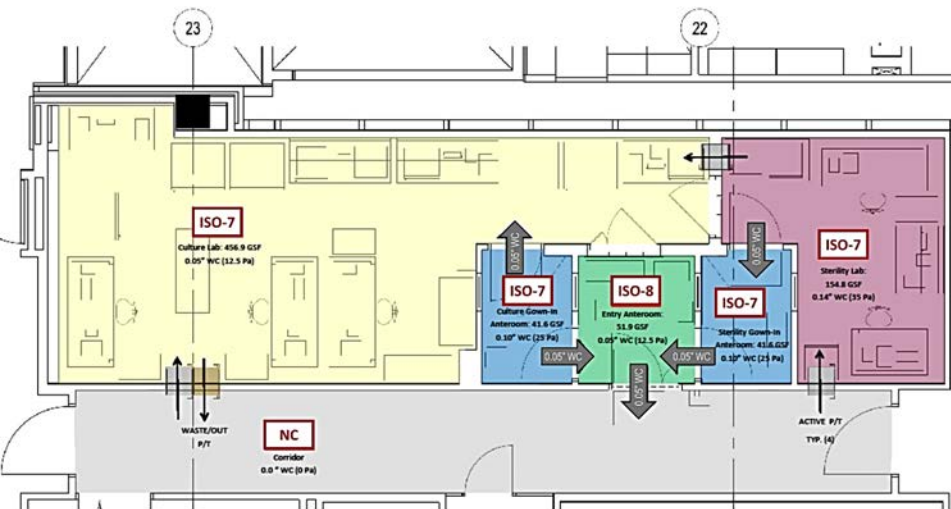
**Project Benefit / Risk Mitigation Strategy:** New facility to support NCI's Surgery Branch.

**Funding Status:** Funded

**Schedule Status:** Construction was completed in September 2020. Facility commissioning and testing were completed in March 2021. NCI is completing the Environmental Monitoring Performance Qualification (EMPQ) for the facility.



## C104603 Department of Laboratory Medicine Sterility Lab



Second Floor of ACRF

**Identified Risk/Impact:** Lack of sterility testing facility will affect patient safety.

### Project Benefit / Risk Mitigation

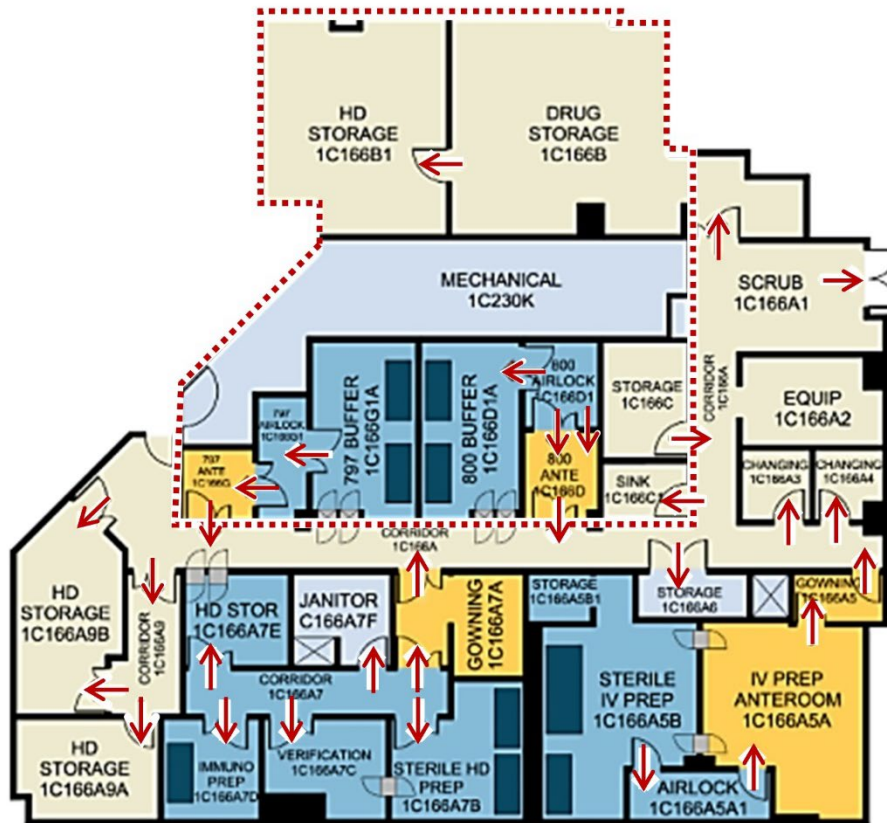
**Strategy:** Sterility testing on a wide-range of investigational new drugs will contribute to patient safety.

**Funding Status:** Funded

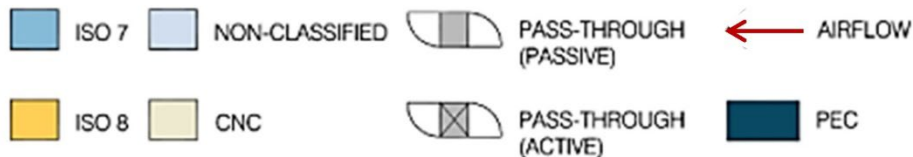
**Schedule Status:** Construction and CQV activities are in progress. Substantial completion scheduled for May 2021.



# C106585 Expansion of Interim IVAU (Shown inside dotted-line Red Polygon)



## LEGEND:



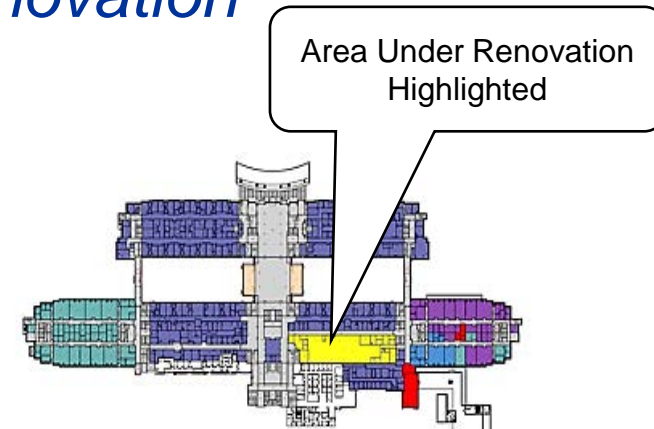
**Identified Risk/Impact:** Current capacity is inadequate.

**Project Benefit / Risk Mitigation Strategy:** Project will provide interim increase in IVAU capacity until we complete P-IVAU, including two each ISO 7 clean rooms with two BSCs each.

**Funding Status:** Funded

**Schedule Status:** Design-build contract awarded. Commissioning/Qualification/Validation (CQV) contract awarded. Previous occupants relocated to allow construction. Construction was completed on 06/30/2020; CQV completed on 07/31/2020. Occupancy permit approved on 09/10/2020, and space turned over to the Pharmacy Department.

# *C105559 Pharmacy and Permanent Intravenous Admixture Unit (P-IVAU) Renovation*



**Identified Risk/Impact:** Interim IVAU is only temporary, is inadequate in size and there is no backup plan in case of a facility emergency. Will involve a new penthouse to house dedicated air handling equipment.

**Project Benefit / Risk Mitigation Strategy:**  
Improved safety and compliance.

**Funding Status:** Funded.

**Schedule Status:** Design-Build contract awarded to DPR Construction in Sep 2019. Completed majority of pre-design demolition work in July 2020. Final design completed Dec 2020. Large crane and new penthouse mechanical room construction above Pediatrics Clinic started late Jan 2021. Estimated completion of construction in Nov 2021. Followed by CQV in Dec 2021 and operational shortly thereafter.



## *C100663 E-Wing Renovation, Including Cell Processing*



**Identified Risk/Impact:** Outdated and inadequate facilities, negatively impacting mission accomplishment.

**Project Benefit / Risk Mitigation**

**Strategy:** Renovated and modernized facilities to support cutting edge research.

**Funding Status:** Funded

**Schedule Status:** In Construction phase.  
Estimated completion in February 2023.

# C100663 E Wing Cross Section and Housing Plan

Mechanical

**Mechanical**

**CC-DTM cGMP Suite**

NIAID

NIDDK

NIDDK, Mechanical

NHLBI

NHLBI, NIMH

NHLBI

NINDS, NIDDK

NIMH, Mechanical

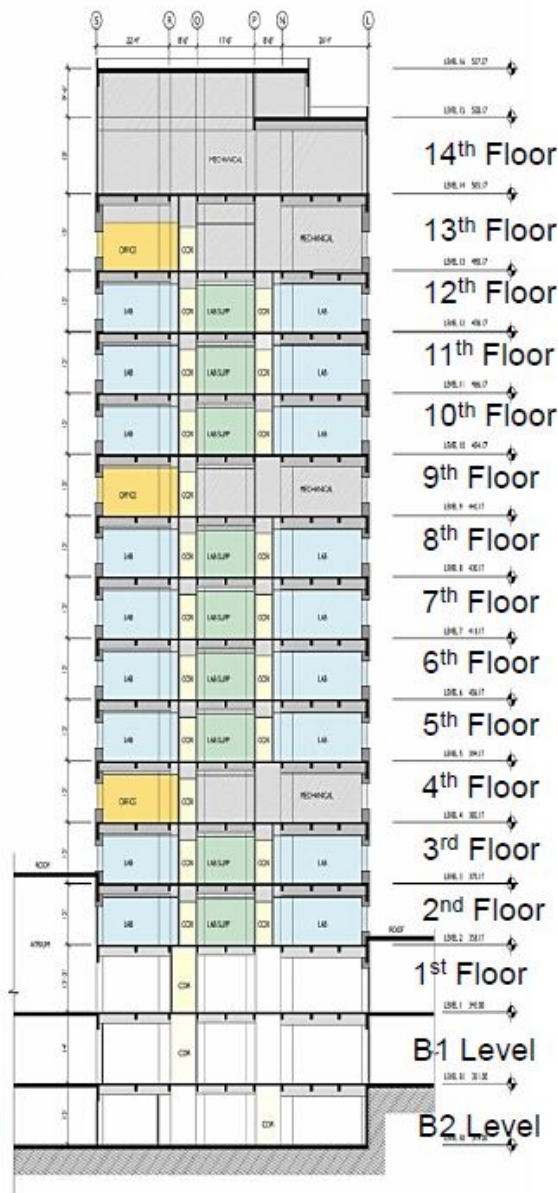
**CC-DTM**

**CC-DTM**

**CC-DTM, WALS**

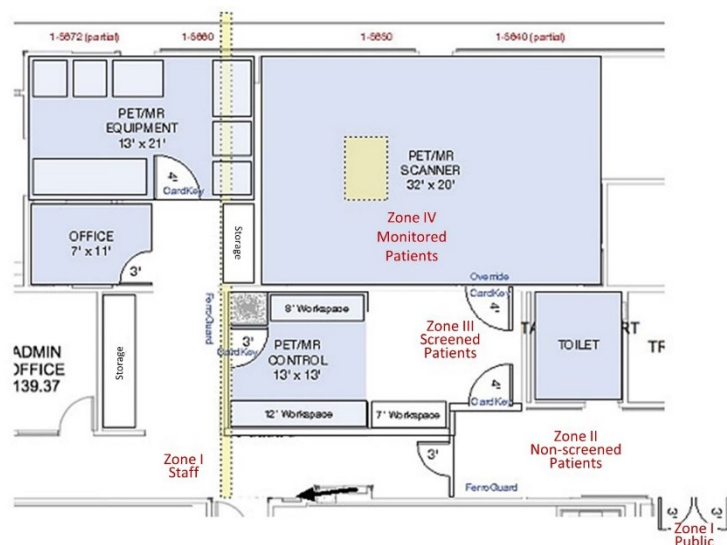
FAES, DFOM

Cagewash, Mechanical



The **Green, Bold Italic**  
Text Indicates Areas  
Associated with the  
Clinical Center  
Department of  
Transfusion Medicine

# C108095 PET/MR Scanner Turnkey Upgrade



**Identified Risk/Impact:** The current nursing and PET space will be renovated to accommodate a new PET/3T-MR scanner, that permits simultaneous PET and MR imaging.

## Project Benefit / Risk Mitigation

**Strategy:** For patients who need both PET and MR scans, there is easier scheduling and only one rather than two separate visits for imaging.

**Funding Status:** Funded

**Schedule Status:** CC awarded design-build contract in May 2020. Construction started in January 2021, and will be completed in June 2021.





## Summary

- Receipt of the SRLM funding is a major milestone. This facility will be a functional, flexible, resilient and sustainable facility. Thanks for your advocacy!!!
- The projects briefed today will enhance patient safety, life safety and the overall environment of care.
- NIH continues to work with HHS, the Office of Management and Budget, and Congress to build trust and knowledge regarding future projects, such as renovations for PET and Nuclear Medicine, a solution for the Outpatient Clinics, and more.



## *Backup Slides Describing Critical Infrastructure Projects Supporting the Building 10 Complex*

These Projects Enhance Patient Safety in Cases of  
Regional or Local Water and Electrical Power Failure;  
They Improve our Emergency Management Posture,  
Whether for Natural or Man-made Events

## *C103578 Building 10 Electrical Vault 10 Upgrade*



**Identified Risk/Impact:** Existing electrical equipment is 38 years old and end of life; increased probability of failure, poor availability of spare parts.

**Project Benefit / Risk Mitigation Strategy:** Improve reliability and sustainability of clinic operations and labs located in ACRF tower.

**Funding Status:** Funded with FY19 NEF funds.

**Schedule Status:** Awarded design-build construction contract in Sep 2019. Completion in 2022.



## *C104250 Chemical-Based Effluent Decontamination System (EDS) for Special Clinical Studies Unit (SCSU)*



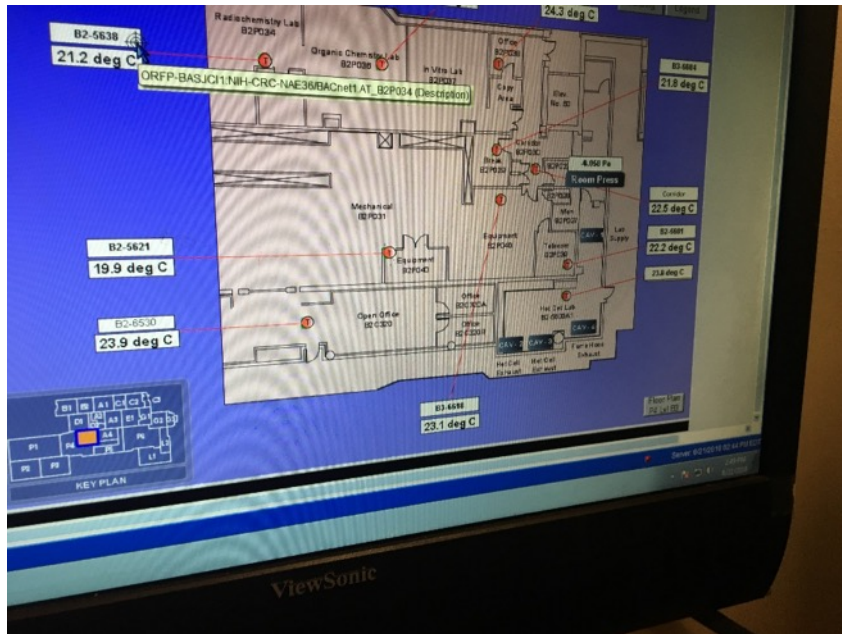
**Identified Risk/Impact:** Ebola virus infected patients may generate nine liters of potentially infectious liquid waste per day. Original World Health Organization recommendations were to dispose of waste into sanitary sewer; however, subsequent studies have indicated that disinfection prior to discharge to sewage lines is prudent.

**Project Benefit / Risk Mitigation Strategy:** Improved safety and compliance. Disinfection of wastewater reduces risk of Ebola transmission, thus addressing public concern.

**Schedule Status:** Construction Completed.

**Funding Status:** Funded

# C101700 Replace Clinical Research Center (CRC) Building Automation System (BAS)



**Identified Risk/Impact:** Building Automation System (BAS) for the CRC is no longer supported by manufacturer, parts are difficult to find, and the system does not meet modern information system security standards making it potentially vulnerable to cyber intrusions.

**Project Benefit / Risk Mitigation Strategy:** Improved temperature and humidity control.

**Funding Status:** Funded

**Schedule Status:** Design-Build contract Awarded; completion in 2023.

## *C100231 Black Start Generators*



**Identified Risk/Impact:** Loss of steam generation/hot water/chilled water distribution due to power outage.

### **Project Benefits / Risk Mitigation**

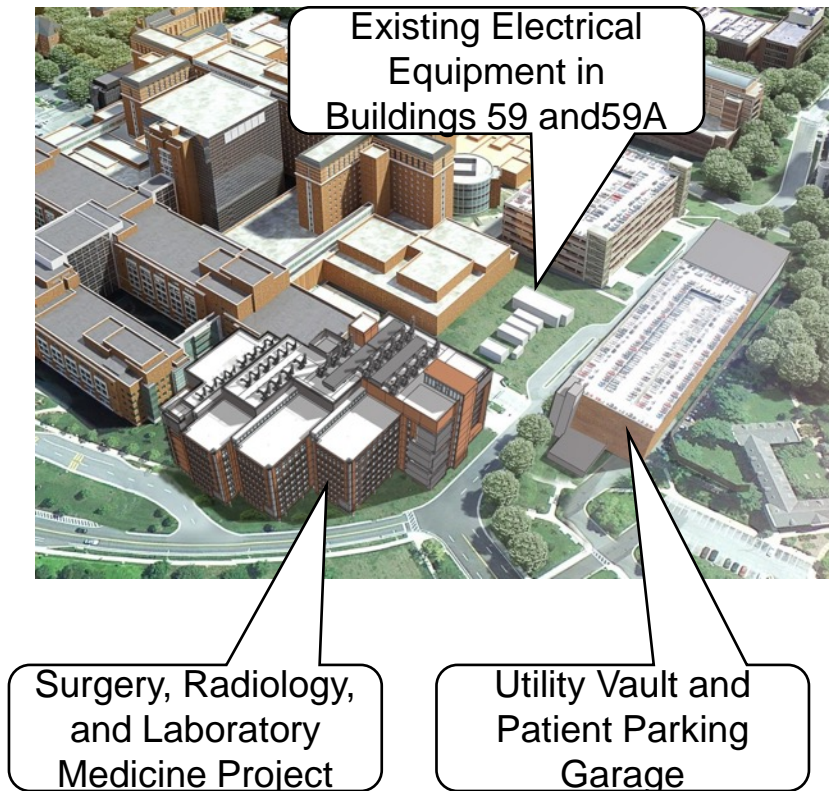
**Strategy:** In a regional power outage, NIH will be able to start the 23-megawatt Cogeneration plant to 1) supply power to boilers to generate steam to buildings during an area power outage; and 2) supply power to chillers to generate chilled water for critical loads, including patient care.

**Schedule Status:** In Design. Completion estimated: December 2022.

**Funding Status:** Funded



## *C104771 Utility Vault and Patient Parking Garage*



**Identified Risk/Impact:** Security Risk – power supply components (normal and emergency) for Building 10/Hospital Complex are currently vulnerable due to unprotected location. Also, the current structure offers no space to accommodate additional electrical equipment needed to support SRLM. Lastly, parking under hospital is suffering from spalling concrete and poses a security threat.

**Project Benefit / Risk Mitigation Strategy:** Protects vital power supply components, for current and future loads, in reinforced structure. Also, decreases parking load in current lot under Building 10.

**Funding Status:** Funded.

**Project/Schedule Status:** Design-Build (DB) contract awarded in September 2019. Electrical feeders were installed to provide needed redundancy. Construction is underway and is scheduled for completion in June 2022.

## *C106418 Electrical Power Supply (Bldg 59/59A Replacement)*



### **Identified Risk/Impact:**

- CRC Emergency Generators and Clinical Center Switchgear are over 20 years old. Switchgear equipment is no longer manufactured; thus, replacement parts have to be custom-made.
- Technology of 480V generators stepped up to 13.8 kV distribution is outdated, requiring step-up transformers, which pose additional power supply system failure points.
- Current location is prone to flooding and poses a security risk.

### **Project Benefit / Risk Mitigation Strategy:**

- Increased reliability of power supply by upgrading to 13.8KV generators
- Minimized failure points and improved reliability
- Generators and switchgear housed in reinforced structure in proposed new Utility Vault.
- Criticality: Project supports SRLM building power requirements and improves reliability to Building 10 complex.

**Funding Status:** ORF plans to use FY2022 B&F funds for this project. Will switch to NEF funds if approved by HHS.

**Schedule Status:** Preparing design; Construction award anticipated in FY2022, pending funding approval. Construction duration is scheduled for 27 months.

